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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,308	04/16/2004	Yuval Lirov	11086-18	7751

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EXAMINER	
LANIER, BENJAMIN E	
ART UNIT	**PAPER NUMBER**
2132	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/825,308	LIROV ET AL.	
	Examiner	Art Unit	
	Benjamin E. Lanier	2132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/31/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 31 August 2005 was filed on the mailing date of the application. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 2 recites, "substantially corresponds," which renders the claim indefinite because it is unclear how similar the encrypted vector and the encrypted fuzzy query vector need to be to be considered substantially corresponding.

5. Claim 8 recites, "substantially corresponds," which renders the claim indefinite because it is unclear how similar the encrypted vector and the encrypted fuzzy query vector need to be to be considered substantially corresponding.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 13 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 13 is directed to a machine-readable medium that has not been defined in the specification as a statutory computer-readable storage medium. An electro-magnetic signal can be considered a machine-readable medium and claims that recite nothing but the physical characteristic of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in §101. Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility Annex IV, Oct. 26, 2005, at http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf, 1300 OG 142 (Nov. 22, 2005). The claims should be amended to specify that the machine-readable medium is a computer-readable storage medium.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-4, 7-10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rangarajan, U.S. Patent No. 5,706,365, in view of Chen, U.S. Patent No. 4,758,955. Referring to claim 1, Rangarajan discloses a system for document indexing using n-gram word decomposition wherein documents are indexed into a searchable database (Col. 5, lines 18-24 & Col. 10, lines 5-9), which meets the limitation of a record database which includes a set of records. The search query can specify a percentage of exactness between the search query and the words present in any document (Col. 10, lines 56-59), which meets the limitation of a fuzzy signature database. The database can be server based (Col. 2, lines 10-11), which meets the limitation of an application server. Indexing of the documents identifies all of the n-grams, such as trigrams in the preferred embodiment (Col. 7, lines 30-35), in each page of the document and updates the database bank (Col. 10, lines 37-42), which meets the limitation of generating a first set of trigrams for each record of the records. The n-grams are sorting according to their ASCII value (Col. 7, lines 12-13), which meets the limitation of sorting the first set of trigrams for each record of the records. Each group of n-gram values is called a work key, and the set of word keys for all the words on a page is the page key (Col. 9, lines 6-9), which meets the limitation of generating signature vectors using the first set of trigrams. There is one entry for each of the pages entries in the bank (Col. 9, lines 24-29 & Figures 4-5), which meets the limitation of wherein one of the signature vectors is assigned to a respective record residing in the record database. Rangarajan does not disclose encrypting the page keys. Chen discloses a text-processing device wherein text is broken down into trigrams and encrypted before being processed for comparisons (Col. 17,

line 37 – Col. 18, line 20), which meets the limitation of encrypting the signature vectors using a key to generate encrypted vectors, wherein one of the encrypted vectors is assigned to the respective record, and storing the encrypted vectors in the fuzzy signature database (based on the combination of references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys of Rangarajan prior to being stored in the database so that an intruder would gain no information as to the content of the documents that have been indexed and stored as taught in Chen (Col. 18, lines 31-33).

Referring to claim 2, Rangarajan discloses that the system is capable of searching any indexed document using search queries specified by users (Col. 10, lines 52-55). The search query is broken down into n-grams and then compared to the n-grams in the database (Col. 10, lines 62-66), which meets the limitation of generating a second set of trigrams for a fuzzy query. Rangarajan does not specifically state that the search query n-grams are sorted or ordered as the indexed document n-grams are (Col. 7, lines 12-19). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to order the search query n-grams in the same fashion as the indexed document n-grams in order to reduce the calculation time of the percentage of exactness between the search query and the words present in any document (Rangarajan: Col. 10, lines 56-61 & Col. 16, lines 54-60) because having the collections ordered the same way would eliminate having to potentially search an entire collection for a corresponding n-gram in the other. Rangarajan discloses that collection of search query n-grams is compared with the collection of word keys in the page key of an indexed document (Col. 16, lines 28-32), which meets the limitation of computing a query vector using the second set of trigrams because collection of search query n-grams is built similarly to that of

the page key of the indexed documents and can therefore be considered a vector. Rangarajan does not disclose encrypting the page keys or the collection of search query n-grams. Chen discloses a text-processing device wherein text is broken down into trigrams and encrypted before being processed for comparisons (Col. 17, line 37 – Col. 18, line 20), which meets the limitation of encrypts the query vector using the key to generate an encrypted fuzzy query vector, and locates a particular vector of the encrypted vector in the fuzzy signature database which substantially corresponds to the encrypted fuzzy search query vector (based on the combination of references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys of Rangarajan prior to being stored in the database and the collection of search query n-grams of Rangarajan prior to being compared with the encrypted page keys, so that an intruder would gain no information as to the content of the documents that have been indexed and stored as taught in Chen (Col. 18, lines 31-33) and comparing the search query n-grams to the page keys in encrypted fashion would eliminate a costly decryption step as well as keep the content of the documents hidden from intruders as mentioned in Chen (Col. 18, lines 31-33).

Referring to claim 3, Rangarajan discloses that the trigrams can be order based on their ASCII value (Col. 7, lines 12-13), which meets the limitation of the first set of trigrams is sorted alphabetically because characters are ordered alphabetically in the ASCII chart (See ASCII chart attached).

Referring to claim 4, Rangarajan does not specifically state that the search query n-grams are sorted or ordered as the indexed document n-grams are (Col. 7, lines 12-19). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

order the search query n-grams in the same fashion (by ASCII value as stated above) as the indexed document n-grams in order to reduce the calculation time of the percentage of exactness between the search query and the words present in any document (Rangarajan: Col. 10, lines 56-61 & Col. 16, lines 54-60) because having the collections ordered the same way would eliminate having to potentially search an entire collection for a corresponding n-gram in the other.

Referring to claim 7, Rangarajan discloses a system for document indexing using n-gram word decomposition wherein documents are indexed into a searchable database (Col. 5, lines 18-24 & Col. 10, lines 5-9), which meets the limitation of a record database. The search query can specify a percentage of exactness between the search query and the words present in any document (Col. 10, lines 56-59), which meets the limitation of a fuzzy signature database. The database can be server based (Col. 2, lines 10-11), which meets the limitation of an application server. Indexing of the documents identifies all of the n-grams, such as trigrams in the preferred embodiment (Col. 7, lines 30-35), in each page of the document and updates the database bank (Col. 10, lines 37-42), which meets the limitation of generating a first set of trigrams for each record of a record database, the record database including a plurality of records. The n-grams are sorting according to their ASCII value (Col. 7, lines 12-13), which meets the limitation of for each record of the records, sorting the first set of trigrams. Each group of n-gram values is called a work key, and the set of word keys for all the words on a page is the page key (Col. 9, lines 6-9), which meets the limitation of generating signature vectors using the first set of trigrams. There is one entry for each of the pages entries in the bank (Col. 9, lines 24-29 & Figures 4-5), which meets the limitation of wherein one of the signature vectors is assigned to a respective record of the records. Rangarajan does not disclose encrypting the page keys. Chen discloses a

text-processing device wherein text is broken down into trigrams and encrypted before being processed for comparisons (Col. 17, line 37 – Col. 18, line 20), which meets the limitation of encrypting the signature vectors using a key to generate encrypted vectors, wherein one of the encrypted vectors is assigned to the respective record, and storing the encrypted vectors in the fuzzy signature database (based on the combination of references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys of Rangarajan prior to being stored in the database so that an intruder would gain no information as to the content of the documents that have been indexed and stored as taught in Chen (Col. 18, lines 31-33).

Referring to claim 8, Rangarajan discloses that the system is capable of searching any indexed document using search queries specified by users (Col. 10, lines 52-55). The search query is broken down into n-grams and then compared to the n-grams in the database (Col. 10, lines 62-66), which meets the limitation of generating a second set of trigrams for a fuzzy query. Rangarajan does not specifically state that the search query n-grams are sorted or ordered as the indexed document n-grams are (Col. 7, lines 12-19). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to order the search query n-grams in the same fashion as the indexed document n-grams in order to reduce the calculation time of the percentage of exactness between the search query and the words present in any document (Rangarajan: Col. 10, lines 56-61 & Col. 16, lines 54-60) because having the collections ordered the same way would eliminate having to potentially search an entire collection for a corresponding n-gram in the other. Rangarajan discloses that collection of search query n-grams is compared with the collection of word keys in the page key of an indexed

document (Col. 16, lines 28-32), which meets the limitation of computing a query vector using the second set of trigrams because collection of search query n-grams is built similarly to that of the page key of the indexed documents and can therefore be considered a vector. Rangarajan does not disclose encrypting the page keys or the collection of search query n-grams. Chen discloses a text-processing device wherein text is broken down into trigrams and encrypted before being processed for comparisons (Col. 17, line 37 – Col. 18, line 20), which meets the limitation of encrypts the query vector using the key to generate an encrypted fuzzy query vector, and locates a particular vector of the encrypted vector in the fuzzy signature database which substantially corresponds to the encrypted fuzzy search query vector (based on the combination of references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys of Rangarajan prior to being stored in the database and the collection of search query n-grams of Rangarajan prior to being compared with the encrypted page keys, so that an intruder would gain no information as to the content of the documents that have been indexed and stored as taught in Chen (Col. 18, lines 31-33) and comparing the search query n-grams to the page keys in encrypted fashion would eliminate a costly decryption step as well as keep the content of the documents hidden from intruders as mentioned in Chen (Col. 18, lines 31-33).

Referring to claim 9, Rangarajan discloses that the trigrams can be order based on their ASCII value (Col. 7, lines 12-13), which meets the limitation of for each record of the records, the first set of trigrams is sorted alphabetically because characters are ordered alphabetically in the ASCII chart (See ASCII chart attached).

Referring to claim 10, Rangarajan does not specifically state that the search query n-grams are sorted or ordered as the indexed document n-grams are (Col. 7, lines 12-19). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to order the search query n-grams in the same fashion (by ASCII value as stated above) as the indexed document n-grams in order to reduce the calculation time of the percentage of exactness between the search query and the words present in any document (Rangarajan: Col. 10, lines 56-61 & Col. 16, lines 54-60) because having the collections ordered the same way would eliminate having to potentially search an entire collection for a corresponding n-gram in the other.

Referring to claim 13, Rangarajan discloses a system for document indexing using n-gram word decomposition wherein documents are indexed into a searchable database (Col. 5, lines 18-24 & Col. 10, lines 5-9), which meets the limitation of a record database. The search query can specify a percentage of exactness between the search query and the words present in any document (Col. 10, lines 56-59), which meets the limitation of a fuzzy signature database. The database can be server based (Col. 2, lines 10-11), which meets the limitation of an application server. Indexing of the documents identifies all of the n-grams, such as trigrams in the preferred embodiment (Col. 7, lines 30-35), in each page of the document and updates the database bank (Col. 10, lines 37-42), which meets the limitation of generating a first set of trigrams for each record of a record database, the record database including a plurality of records. The n-grams are sorting according to their ASCII value (Col. 7, lines 12-13), which meets the limitation of for each record of the records, sorting the first set of trigrams. Each group of n-gram values is called a work key, and the set of word keys for all the words on a page is the page key (Col. 9, lines 6-9), which meets the limitation of generating signature vectors using the

first set of trigrams. There is one entry for each of the pages entries in the bank (Col. 9, lines 24-29 & Figures 4-5), which meets the limitation of wherein one of the signature vectors is assigned to a respective record of the records. Rangarajan does not disclose encrypting the page keys. Chen discloses a text-processing device wherein text is broken down into trigrams and encrypted before being processed for comparisons (Col. 17, line 37 – Col. 18, line 20), which meets the limitation of encrypting the signature vectors using a key to generate encrypted vectors, wherein one of the encrypted vectors is assigned to the respective record, and storing the encrypted vectors in the fuzzy signature database (based on the combination of references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys of Rangarajan prior to being stored in the database so that an intruder would gain no information as to the content of the documents that have been indexed and stored as taught in Chen (Col. 18, lines 31-33).

11. Claims 5, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rangarajan, U.S. Patent No. 5,706,365, in view of Chen, U.S. Patent No. 4,758,955 as applied to claims 1, 7 above, and further in view of Antognini, U.S. Patent No. 5,649,185. Referring to claim 5, Rangarajan does not disclose limiting access to the indexed documents to users that have assigned privileges to do so. Antognini discloses a method and means for access control to a database wherein database entries are accessible to users with the appropriate privileges to access the entries (Col. 21, lines 8-10), which meets the limitation of the record database includes non-privileged user records and privileged user records. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include access privileges with the

indexed documents of Rangarajan in order to limit possible database damage to the entries for which the user has privileges as taught in Antognini (Col. 21, lines 28-30).

Referring to claim 11, Rangarajan does not disclose limiting access to the indexed documents to users that have assigned privileges to do so. Antognini discloses a method and means for access control to a database wherein database entries are accessible to users with the appropriate privileges to access the entries (Col. 21, lines 8-10), which meets the limitation of the record database includes non-privileged user records and privileged user records. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include access privileges with the indexed documents of Rangarajan in order to limit possible database damage to the entries for which the user has privileges as taught in Antognini (Col. 21, lines 28-30).

12. Claims 6, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rangarajan, U.S. Patent No. 5,706,365, in view of Chen, U.S. Patent No. 4,758,955 as applied to claims 1, 2, 7, 8 above, and further in view of Schneier. Referring to claim 6, Chen discloses using keys to encrypt the trigrams (Col. 17, lines 37-50), but does not disclose using a public/private key cryptosystem. It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys and search query n-grams of Rangarajan so that confidentiality of the decrypting key (private key) can be assured since the public key system does not require the decrypting key to be distributed in order for decryption to occur because the decrypting key is kept secret while the encrypting key is the key that is broadcast and is incapable of decrypting the encrypted content (Schneier: Pages 31-32).

Referring to claim 12, Chen discloses using keys to encrypt the trigrams (Col. 17, lines 37-50), but does not disclose using a public/private key cryptosystem. It would have been obvious to one of ordinary skill in the art at the time the invention was made to encrypt the page keys and search query n-grams of Rangarajan so that confidentiality of the decrypting key (private key) can be assured since the public key system does not require the decrypting key to be distributed in order for decryption to occur because the decrypting key is kept secret while the encrypting key is the key that is broadcast and is incapable of decrypting the encrypted content (Schneier: Pages 31-32).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shwarts, U.S. Patent No. 5,802,516, discloses a method of searching the contents of a book for certain character strings using trigrams.

Callan, U.S. Patent No. 6,105,023, discloses a method of document matching using trigrams.

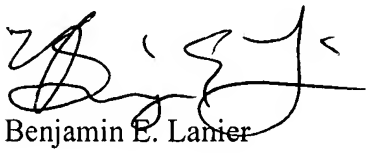
Schmitt, U.S. Patent No. 5,062,143, discloses a method of identifying the language of specific texts using trigrams.

Lee, U.S. Patent No. 6,658,151, discloses a method and apparatus for comparing the similarity between documents based on n-gram terms.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin E. Lanier whose telephone number is 571-272-3805. The examiner can normally be reached on M-Th 7:30am-5:00pm, F 7:30am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Benjamin E. Lanier